



# Gateway School District Curriculum Map

## Elementary Schools (K-4)

Cleveland Steward Elementary  
5000 Gateway Campus Blvd.  
Monroeville, PA 15146  
412-373-5874

Ramsey Elementary  
2200 Ramsey Road  
Monroeville, PA 15146  
412-373-5856

Evergreen Elementary  
3831 Evergreen Drive  
Monroeville, PA 15146  
412-373-5842

University Park Elementary  
320 Noel Drive  
Monroeville, PA 15146  
412-327-4113

## Curriculum Map: (Elementary) Grade 2 - Mathematics

Course: Math Grade 2



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## Unit 1: Fluency of Sums and Differences to 20 and Word Problems to 100

Subject: Grade 2 - Mathematics

### Brief Summary of Unit

Students work extensively with numbers to 10 and practice to achieve mastery of the expected fluencies (i.e., adding and subtracting within 20 and within 100). Students learn to represent and solve problems using addition and subtraction: a practice that will also continue throughout the year.

### Stage One - Desired Results

**Established Goals:**(Standards of Learning, content standards)

1. Add and subtract numbers within 100 in the context of one- and two-step word problems.
2. Fluently add and subtract within 20 using mental strategies.
3. Use place value understanding and properties of operations to add and subtract.
4. Add up to four two-digit numbers using strategies based on place value and properties of operations.
5. Explain why addition and subtraction strategies work, using place value and the properties of operations.
6. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20.
7. Apply properties of operations as strategies to add and subtract (commutative property of addition; associative property of addition).

**Understandings:**What will students understand (about what big ideas) as a result of the unit? "Students will understand that..."

1. Mathematical relationships can be represented as expressions, equations, and inequalities in mathematical situations.
2. Numerical quantities, calculations, and measurements can be estimated or

**Essential Questions:**What arguable, recurring, and thought-provoking questions will guide inquiry and point toward the big ideas of the unit?

1. How are relationships represented mathematically?
2. How can expressions, equations, and inequalities be used to quantify, solve,

analyzed by using appropriate strategies and tools.

3. Data can be modeled and used to make inferences.
4. Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization.
5. Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions.
6. Mathematical relationships among numbers can be represented, compared, and communicated.
7. Measurement attributes can be quantified and estimated using customary and non-customary units of measure.
8. Patterns exhibit relationships that can be extended, described, and generalized.

model and/or analyze mathematical situations?

3. What does it mean to estimate or analyze numerical quantities?
4. When is it appropriate to estimate versus calculate?
5. What makes a tool and/or strategy appropriate for a given task?
6. How does the type of data influence the choice of display?
7. How can probability and data analysis be used to make predictions?
8. How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?
9. How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?
10. How can geometric properties and theorems be used to describe, model, and analyze situations?
11. How can data be organized and represented to provide insight into the relationship between quantities?
12. How is mathematics used to quantify, compare, represent, and model numbers?
13. How can mathematics support effective communication?
14. Why does "what" we measure influence "how" we measure?
15. In what ways are the mathematical attributes of objects or processes measured, calculated, and/or interpreted?
16. How precise do measurements and calculations need to be?
17. How can patterns be used to describe relationships in mathematical situations?
18. How can recognizing repetition or regularity assist in solving problems more efficiently?

**Stage Two - Assessment Evidence**

**Performance Tasks:** What evidence will be collected to determine whether or not the understandings have been developed, the knowledge and skill attained, and the state standards met?

**Other Evidence:** (quizzes, tests and so on)

**Stage Three - Learning Plan (will include D.I.)**

## Unit 2: Addition and Subtraction with Length, Weight, Capacity, and Time Measurements

Subject: Grade 2 - Mathematics

### Brief Summary of Unit

Students learn to measure and estimate using standard units for length and solve measurement word problems involving addition and subtraction of length. They use measurement tools with the understanding that linear measure involves an iteration of units and that the smaller a unit, the more iterations are necessary to cover a given length. Students learn the meaning of a "unit" in different contexts (e.g., capacity, length, weight, and time). This understanding serves as the foundation of arithmetic, measurement, and geometry in elementary school. In particular, *units* play a central role in the next module and in the addition and subtraction algorithms of Module 4.

### Stage One - Desired Results

**Established Goals:**(Standards of Learning, content standards)

1. Use measurement tools.
2. Understand a "unit" of measurement.
3. Solve word problems involving addition and subtraction of length.
4. Understand the relationship between the size of the unit and the number of units needed to cover a given length.
5. Understand when to estimate and when to use exact measurements.
6. Estimate lengths.
7. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
8. Measure the same length with different-sized units then discuss the measurement made with the smaller unit is more than the measurement made with the larger unit and vice versa.
9. Estimate lengths using units of inches, feet, centimeters, and meters.
10. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.
11. Tell and write time from analog and digital clocks to the nearest five minutes.
12. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units by using drawings and equations with a symbol for the unknown number to represent the problem.
13. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, and represent whole-number sums and differences within 100 on a number line diagram.

**Understandings:**What will students understand (about what big ideas) as a result of the unit? "Students will understand that..."

**Essential Questions:**What arguable, recurring, and thought-provoking questions will guide inquiry and point toward the big ideas of the unit?

### Stage Two - Assessment Evidence

**Performance Tasks:**What evidence will be collected to determine whether or not the understandings have been developed, the knowledge and skill attained, and the state standards

met?

**Other Evidence:**(quizzes, tests and so on)

**Stage Three - Learning Plan (will include D.I.)**

# Unit 3: Place Value, Counting, and Comparison of Numbers to 1000

Subject: Grade 2 - Mathematics

## Brief Summary of Unit

Students extend their understanding of base-ten notation and apply their understanding of place value to count and compare numbers to 1000. In Grade 2 the place value units move from a proportional model to a non-proportional number disk model. The place value table with number disks is one tool that can be used in grade 2 and beyond for modeling very large numbers and decimals, thus providing students greater facility with and understanding of mental math and algorithms.

## Stage One - Desired Results

**Established Goals:**(Standards of Learning, content standards)

- 1.Count numbers to 1000 by ones, 2s, 5s, 10s, and 100s.
- 2.Represent numbers to 1000 using concrete models, drawings, words, and numbers.
- 3.Compare numbers to 1000.
- 4.Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones.
- 5.Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons.
- 6.Count within 1000; skip-count by 5s, 10s, and 100s.
- 7.Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

**Understandings:**What will students understand (about what big ideas) as a result of the unit? "Students will understand that..."

**Essential Questions:**What arguable, recurring, and thought-provoking questions will guide inquiry and point toward the big ideas of the unit?

## Stage Two - Assessment Evidence

**Performance Tasks:**What evidence will be collected to determine whether or not the understandings have been developed, the knowledge and skill attained, and the state standards met?

**Other Evidence:**(quizzes, tests and so on)

## Stage Three - Learning Plan (will include D.I.)

## Unit 4: Addition and Subtraction of Numbers to 1000

Subject: Grade 2 - Mathematics

### Brief Summary of Unit

Students continue to work with place value units to understand the addition and subtraction algorithms of numbers up to 1000. This work deepens their understanding of base-ten, place value, and properties of operations. It also challenges them to apply their knowledge to one-step and two-step word problems. During this module, students also continue to develop one of the required fluencies of the grade: addition and subtraction within 100.

### Stage One - Desired Results

**Established Goals:**(Standards of Learning, content standards)

- 1.Represent and solve addition and subtraction problems, including word problems, within 1000.
- 2.Use place value and properties of operations to find sums and differences.
- 3.Improve fluency with addition and subtraction within 100.
- 4.Mentally add and subtract within 20.
- 5.Add up to four two-digit numbers using strategies based on place value and properties of operations.
- 6.Add and subtract within 1000.
- 7.Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
- 8.Explain why addition and subtraction strategies work, using place value and the properties of operations.
- 9.Use addition and subtraction within 100 to solve one- and two-step word problems by using drawings and equations with a symbol for the unknown number to represent the problem.
- 10.Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20.
- 11.Add and subtract within 20. Use strategies such as counting on; making ten; decomposing a number leading to a ten; using the relationship between addition and subtraction; and creating equivalent but easier or known sums.
- 12.Apply properties of operations as strategies to add and subtract (commutative property of addition; associative property of addition).
- 13.Understand subtraction as an unknown-addend problem. For example, subtract  $10 - 8$  by finding the number that makes 10 when added to 8.

**Understandings:**What will students understand (about what big ideas) as a result of the unit? "Students will understand that..."

**Essential Questions:**What arguable, recurring, and thought-provoking questions will guide inquiry and point toward the big ideas of the unit?

### Stage Two - Assessment Evidence

**Performance Tasks:**What evidence will be collected to determine whether or not the understandings have been developed, the knowledge and skill attained, and the state standards

met?

**Other Evidence:**(quizzes, tests and so on)

**Stage Three - Learning Plan (will include D.I.)**

## Unit 5: Preparation for Multiplication and Division

Subject: Grade 2 - Mathematics

### Brief Summary of Unit

Students extend their understanding of a unit to build the foundation for multiplication and division. Making equal groups of "four apples each" establishes the unit "four apples" (or just four) that can then be counted: 1 four, 2 fours, 3 fours, etc. Relating the new unit to the one used to create it develops the idea of multiplication: 3 groups of 4 apples equal 12 apples (or 3 fours are 12).

### Stage One - Desired Results

**Established Goals:**(Standards of Learning, content standards)

1. Make equal groups of objects and count them.
2. Partition a set into equal groups.
3. Arrange a group of objects into an array.
4. Determine whether a group of objects (up to 20) has an odd or even number of members and write an equation to express an even number as a sum of two equal addends.
5. Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

**Understandings:**What will students understand (about what big ideas) as a result of the unit? "Students will understand that..."

**Essential Questions:**What arguable, recurring, and thought-provoking questions will guide inquiry and point toward the big ideas of the unit?

### Stage Two - Assessment Evidence

**Performance Tasks:**What evidence will be collected to determine whether or not the understandings have been developed, the knowledge and skill attained, and the state standards met?

**Other Evidence:**(quizzes, tests and so on)

### Stage Three - Learning Plan (will include D.I.)



# Unit 6: Comparison, Addition and Subtraction with Length and Money

Subject: Grade 2 - Mathematics

## Brief Summary of Unit

Students practice their algorithms and problem-solving skills with perhaps the most well-known, interesting units of all: dollars, dimes, and pennies. They revisit measuring and estimating length in the context of units from both the customary system (e.g., inches and feet) and the Metric System (e.g., centimeters and meters). As they study money and length, students represent data given by measurement and money data using picture graphs, bar graphs, and line plots.

## Stage One - Desired Results

**Established Goals:**(Standards of Learning, content standards)

- 1.Measure and estimate length in both customary and metric units.
- 2.Add lengths.
- 3.Solve addition and subtraction problems involving money.
- 4.Represent data given by measurement and money data using graphs.
- 5.Improve fluency with addition and subtraction.
- 6.Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
- 7.Measure the same length with different-sized units then discuss the measurement made with the smaller unit is more than the measurement made with the larger unit and viceversa.
- 8.Estimate lengths using units of inches, feet, centimeters, and meters.
- 9.Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.
- 10.Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ? symbols appropriately.
- 11.Make a line plot to show measurement data of the lengths of several objects to the nearest whole-number unit.
- 12.Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems using information presented in the graph.
- 13.Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units by using drawings and equations with a symbol for the unknown number to represent the problem.
- 14.Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, and represent whole-number sums and differences within 100 on a number line diagram.

**Understandings:**What will students understand (about what big ideas) as a result of the unit? "Students will understand that..."

**Essential Questions:**What arguable, recurring, and thought-provoking questions will guide inquiry and point toward the big ideas of the unit?

## Stage Two - Assessment Evidence

**Performance Tasks:**What evidence will be collected to determine whether or not the

understandings have been developed, the knowledge and skill attained, and the state standards met?

**Other Evidence:**(quizzes, tests and so on)

**Stage Three - Learning Plan (will include D.I.)**

# Unit 7: Recognizing Angles, Faces, and Vertices of Shapes, Fractions of Shapes

Subject: Grade 2 - Mathematics

## Brief Summary of Unit

Students describe and analyze shapes in terms of their sides and angles. They investigate, describe, and reason about the composition and decomposition of shapes to form other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.

## Stage One - Desired Results

**Established Goals:**(Standards of Learning, content standards)

1. Identify, describe, and draw triangles, quadrilaterals, pentagons, and hexagons.
2. Recognize that equal shares of identical wholes need not have the same shape.
3. Partition circles and rectangles into two, three, or four equal shares.
4. Recognize and draw shapes having specified attributes, such as a given number of angles or equal faces.
5. Recognize and draw shapes having specified attributes. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
6. Partition circles and rectangles into two, three, or four equal shares, recognize that equal shares of identical wholes need not have the same shape.

**Understandings:**What will students understand (about what big ideas) as a result of the unit? "Students will understand that..."

**Essential Questions:**What arguable, recurring, and thought-provoking questions will guide inquiry and point toward the big ideas of the unit?

## Stage Two - Assessment Evidence

**Performance Tasks:**What evidence will be collected to determine whether or not the understandings have been developed, the knowledge and skill attained, and the state standards met?

**Other Evidence:**(quizzes, tests and so on)

## Stage Three - Learning Plan (will include D.I.)

# Unit Summary: Gr 2 - Standards for Mathematical Practice

Subject: Grade 2 - Mathematics

## Brief Summary of Unit

### Standards for Mathematical Practice

[Mathematical Practices](#) resource page on SAS

#### Unit 1:

- MP# 1. Make sense of problems and persevere in solving them
- MP# 2. Reason abstractly and quantitatively
- MP# 3. Construct viable arguments and critique the reasoning of others
- MP# 5. Use appropriate tools strategically
- MP# 6. Attend to precision

#### Unit 2:

- MP# 1. Make sense of problems and persevere in solving them
- MP# 3. Construct viable arguments and critique the reasoning of others
- MP# 5. Use appropriate tools strategically
- MP# 6. Attend to precision

#### Unit 3:

- MP# 2. Reason abstractly and quantitatively
- MP# 7. Look for and make use of structure
- MP# 8. Look for and express regularity in repeated reasoning

#### Unit 4:

- MP# 1. Make sense of problems and persevere in solving them
- MP# 2. Reason abstractly and quantitatively
- MP# 3. Construct viable arguments and critique the reasoning of others
- MP# 4. Model with mathematics
- MP# 5. Use appropriate tools strategically
- MP# 8. Look for and express regularity in repeated reasoning

#### Unit 5:

- MP# 2. Reason abstractly and quantitatively
- MP# 3. Construct viable arguments and critique the reasoning of others
- MP# 7. Look for and make use of structure
- MP# 8. Look for and express regularity in repeated reasoning

#### Unit 6:

- MP# 1. Make sense of problems and persevere in solving them
- MP# 2. Reason abstractly and quantitatively
- MP# 4. Model with mathematics
- MP# 5. Use appropriate tools strategically
- MP# 8. Look for and express regularity in repeated reasoning

#### Unit 7:

MP# 2. Reason abstractly and quantitatively  
MP# 3. Construct viable arguments and critique the reasoning of others  
MP# 4. Model with mathematics  
MP# 6. Attend to precision

### Stage One - Desired Results

**Established Goals:**(Standards of Learning, content standards)

**Understandings:**What will students understand (about what big ideas) as a result of the unit? "Students will understand that..."

**Essential Questions:**What arguable, recurring, and thought-provoking questions will guide inquiry and point toward the big ideas of the unit?

### Stage Two - Assessment Evidence

**Performance Tasks:**What evidence will be collected to determine whether or not the understandings have been developed, the knowledge and skill attained, and the state standards met?

**Other Evidence:**(quizzes, tests and so on)

### Stage Three - Learning Plan (will include D.I.)